CONSTRUCTION CARPENTRY TECHNOLOGY

Program of Studies
2015-2016

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CARPENTRY

Course Title	Post-Secondary Connection	Valid Course Code	Recommended Grade Level				Recommended Credit
			9	10	11	12	
Cabinet Construction and Installation	CAR 240/241	460209		X	X	X	1
Ceiling and Roof Framing	CAR 196/197	460213	X	X	X	X	1
Construction Forms	CAR 150/151	460218		X	X	X	1
Construction Prints	BRX 220	460217		X	X	X	.5
Co-op (Carpentry)	CAR 299	460242			X	X	1
Exterior and Interior Finish	CAR 200/201	460219		X	X	X	1
Floor and Wall Framing	CAR 190/191	460212	X	X	X	X	1
Industrial Safety	ISX 100	499930	X	X	X	X	.5
Introduction to Construction Technology	CAR 126/127	460201	X	X	X	X	1
Internship (Carpentry)		460245			X	X	1
Site Layout and Foundations	CAR 140/141	460214		X	X	X	1

CONSTRUCTION CARPENTRY TECHNOLOGY

Program Description

The Construction Carpentry Technology program will prepare students for a meaningful career in residential and commercial construction. Program completion may lead to placement in an apprenticeship program and/or admission to a postsecondary program. Students will have the opportunity to train at construction sites through work-based learning and student projects. Current and traditional building practices, which meet industry standards, include energy efficient construction, health and safety at the workplace, and maintenance of existing structures.

Students will learn the safe and proper use of tools, equipment, and techniques used in the construction industry. Formative and summative assessments will be used to determine student proficiency in hand and power tool operation. Instruction will include proper procedures for constructing residential and commercial projects. Students will complete hands-on projects starting from construction prints to completion.

Course offerings promote career opportunities for those entering the industry. There are multiple options available for program completers which may include apprentice, journeyman carpenter, foreman, and engineer or project manager with additional post-secondary course work. Articulation agreements with post-secondary institutions are available for college credit during or after program completion. Advanced placement is available through the Indiana Kentucky Ohio Regional Council of Carpenters Joint Apprenticeship and Training Fund (IKORCCJATF) apprenticeship program. Students completing the journeyman level of the IKORCCJATF apprenticeship program will obtain an associate's degree from an approved college or university.

The Construction Carpentry Program prepares students for high-skill, high-wage, and high-demand careers.

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Sample: KENTUCKY CAREER PATHWAY/PROGRAM OF STUDY 2015-2016

COLLEGE/UNIVERSITY:	College / State University	**CLUSTER:**	Construction
	KCTCS Community College	**PATHWAY:**	Carpenter Assistant/Forms Assistant
HIGH SCHOOL (S):	KY ATC/CTC/High School	**PROGRAM:**	Carpentry

	GRADE	ENGLISH	MATH	SCIENCE	SOCIAL STUDIES	REQUIRED COURSES RECOMMENDED ELECTIVE COURSES OTHER ELECTIVE COURSES CAREER AND TECHNICAL EDUCATION COURSES			CREDENTIAL CERTIFICATE DIPLOMA DEGREE	SAMPLE OCCUPATIONS
SECONDARY	9	English I	Algebra I	Earth Space Science	World History	Health and PE	Car 126 Intro to Constr Tech 460201	CAR 190 Floor & Wall Framing 460212		
	10	English II	Geometry	Biology I	World Civics	History and Appreciation of Fine Arts	BRX220 Constr. Prints 460217	CAR 140 Site Layout & Founndations		
	11	English III	Algebra II	Physics or Chemistry	U.S. History	Foreign Language	CAR 150 Construction Forms 460218	CAR 200 Exterior & Interior Finish	NCCER Carpentry Level 1	Carpenter Assistant
	12	English IV	Math Elective	Computer Aided Drafting (elective)	World Geography	CAR 196 Ceiling & Roof Framing 460213	CAR 198 Intership Carpentry 460245	CAR 299 Co-op Carpentry 460242		Finish Carpenter Assistant
POSTSECONDARY	Year 13	ENG 101 Writing I	MT 110 Applied Mathematics	ASTR 104 Astronomy	College Chemistry	PSY 100 Intro Psychology	CAR 205 Introduction to Acoustical Carpentry	Occupation Safety	Construction Carpenter	Industry Apprenticeship
	Year 14	ENG 200 Intro/Literature	Math 200	WLD 221 Certification Lab	HIS 109 US History	CAR 140 Surveying & Foundations	Materials Science	INF 125 Introduction to Drywall	Associates Degree in Applied Science	Construction Foreman / Manager
	Year 15	ENG 200 Intro/Literature	MAT 250 CALCULUS	PHY 236 UNIV. PHYSICS I	CIV 102 WORLD CIV. II	PHY 195 METHODS OF ENG. PHYSICS	CIV 102 WORLD CIV. II	CAD 200 Intermediate Computer Aided design		
	Year 16	PHY 140 INTRO. COMPUTING APPS.	MAT 308 CALCULUS II	PHY 259 STATICS	MAT 309 CALCULUS III	MAT 411 DIFFERENTIALS EQTNS.	TECHNICAL ELECTIVE	PHY 330 DYNAMICS		
	Year 17	PHY 344 FLUID MECHANICS	PHY 370 INTRO. MODERN PHYSICS	CHE 201 GEN. COLLEGE CHEM. I	HUM 211 HUMANITIES	ITD 102 CAD APPLICATIONS	PHY 346 HEAT TRANSFER	PHY 375 MATERIALS SCIENCE	PHY 390 ENGR. MEASUREMENT	TECH.ELECTIVE
	Year 17	PHY 359 MECHANICS OF MATERIALS	PHY 470 OPTICS	PHY 498 SENIOR ENGR. DESIGN I	ECO 231 PRINC. OF MICROECONOMICS	PHY 499 SENIOR ENGR. DESIGN II	TECHNICAL ELECTIVE	MAT DEPTH ELECTIVE	FREE ELECTIVE	HUM/FA ELEC.
								BACHELORS DEGREE ENGINEERING	Western Kentucky UNIVERSITY	ENGINEER

Other Elective Courses

Career and Technical Education Courses

Credit-Based Transition Programs (e.g. Dual/Concurrent Enrollment, Articulated Courses, 2+2+2)

(◆=High School to Comm. College) (● =Com. College to 4-Yr Institution) (■ = Opportunity to test out)

Mandatory Assessments, Advising, and Additional Preparation

TECHNICAL COLLEGE CREDIT GIVEN THROUGH THE KCTCS DUAL ENROLLMENT PROGRAM

Certificate given through the Warren County Area Technology Center

Degree given through the Bowling Green Technical College KCTCS

DEGREE GIVEN THROUGH THE MURRAY STATE UNIVERSITY

Funded by the U. S. Department of Education
(V051B020001)
Revised Jan. 2005
October, 2006-CTE/Kentucky

CCTI College and Career Transitions Initiative

CONSTRUCTION CARPENTRY TECHNOLOGY
CAREER PATHWAYS
2015-2016

CARPENTER ASSISTANT
CIP 46.0201.01

PATHWAY DESCRIPTION: A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

BEST PRACTICE CORE	**EXAMPLE ILP-RELATED CAREER TITLES**
Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) *Complete **(2) TWO CREDITS:*** • 460201 Introduction to Construction Technology • 460212 Floor and Wall Framing *Choose **(2) TWO CREDITS** from the following:* • 460213 Ceiling and Roof Framing • 460217 Construction Prints* AND 499930 Industrial Safety* • 460214 Site Layout and Foundations • 460242 Co-op (Carpentry) OR 460245 Internship (Carpentry) Note: (*) Indicates half-credit course	Carpenter Construction Laborer Construction Manager Construction Tradesperson Drywall Installer

CONSTRUCTION CARPENTRY TECHNOLOGY
CAREER PATHWAYS
2015-2016

CONSTRUCTION FORMS ASSISTANT
CIP 46.0201.03

PATHWAY DESCRIPTION: A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

BEST PRACTICE CORE	**EXAMPLE ILP-RELATED CAREER TITLES**
Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) *Complete **(2) TWO CREDITS:*** • 460201 Introduction to Construction Technology • 460218 Construction Forms *Choose **(2) TWO CREDITS** from the following:* • 460212 Floor and Wall Framing • 460213 Ceiling and Roof Framing • 460214 Site Layout and Foundations • 460242 Co-op (Carpentry) OR 460245 Internship (Carpentry)	Carpenter Construction Laborer Construction Manager Construction Tradesperson Drywall Installer Flooring Installer

CONSTRUCTION CARPENTRY TECHNOLOGY
CAREER PATHWAYS
2015-2016

FINISH CARPENTERS ASSISTANT
CIP 46.0201.05

PATHWAY DESCRIPTION: A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

BEST PRACTICE CORE	**EXAMPLE ILP-RELATED CAREER TITLES**
Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) *Complete **(3) THREE CREDITS:*** • 460201 Introduction to Construction Technology • 460212 Floor and Wall Framing • 460219 Exterior and Interior Finish *Choose **(1) ONE CREDIT** from the following:* • 460209 Cabinet Construction and Installation • 460217 Construction Prints* AND 499930 Industrial Safety* • 460242 Co-op (Carpentry) OR 460245 Internship (Carpentry) Note: (*) Indicates half-credit course	Carpenter Construction Laborer Construction Manager Construction Tradesperson Flooring Installer Furniture Finisher Production Woodworker

CONSTRUCTION CARPENTRY TECHNOLOGY
CAREER PATHWAYS
2015-2016

RESIDENTIAL CARPENTER ASSISTANT
CIP 46.0201.02

PATHWAY DESCRIPTION: A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

BEST PRACTICE CORE	**EXAMPLE ILP-RELATED CAREER TITLES**
Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) *Complete **(2) TWO CREDITS:*** • 460201 Introduction to Construction Technology • 460212 Floor and Wall Framing *Choose **(2) TWO CREDITS** from the following:* • 460213 Ceiling and Roof Framing • 460214 Site Layout and Foundations • 460219 Exterior and Interior Finish • 460209 Cabinet Construction and Installation • 460242 Co-op (Carpentry) OR 460245 Internship (Carpentry)	Carpenter Construction Laborer Construction Manager Construction Tradesperson Drywall Installer Flooring Installer Production Woodworker

CONSTRUCTION CARPENTRY TECHNOLOGY
CAREER PATHWAYS
2015-2016

CARPENTRY -- TRACK
CIP 46.0201.99

PATHWAY DESCRIPTION: A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standard. Each student must pass an End of Program assessment and complete 8 OSHA Safety modules listed on the "Track" website (**http://www.laborcabinetetrain.ky.gov/track.html**) to be eligible to receive credit and preference in an organization that sponsors a registered apprenticeship program. Course credit will be considered at the discretion of training provider (grades and attendance can be taken into consideration).

BEST PRACTICE CORE	**EXAMPLE ILP-RELATED CAREER TITLES**
Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) *Complete **(4) FOUR CREDITS:*** • 460201 Introduction to Construction Technology • 460212 Floor and Wall Framing • 460213 Ceiling and Roof Framing • 460214 Site Layout and Foundations	Carpenter Construction Tradesperson

The Tech Ready Apprentices for Careers in Kentucky (*TRACK*) pre-apprenticeship program is a partnership between The Kentucky Department of Education's Office of Career and Technical Education and The Kentucky Labor Cabinet to provide pre-apprenticeship career pathway opportunities into registered apprenticeship programs to secondary students. This is a business and industry driven program to create a pipeline for students to enter post-secondary apprenticeship training.

Upon successful completion, the student will be awarded an industry certification by the employer or training organization through The Kentucky Labor Cabinet and all on-the-job hours worked will be counted towards the apprenticeship, if applicable. The certification will also count towards the local school district's college and career ready accountability index.

The specifics of the TRACK program vary and interested parties will need to confer with the Office of Career and Technical Education for the implementation process. There are no costs involved except wages for the student employee. The employer must have a registered apprenticeship program with The Kentucky Labor Cabinet. For more information, please refer to: http://education.ky.gov/CTE/cter/Pages/TRACK.aspx

As career pathways continue to expand, the ultimate rationale is that if an employer is willing to implement a Registered Apprenticeship program, a pipeline at the secondary level can be developed utilizing the TRACK program.

COMPLIMENTARY OR ADVANCED COURSEWORK BEYOND CONSTRUCTION/CARPENTRY TECHNOLOGY PATHWAY(s)
Upon completion of a pathway, additional coursework to enhance student learning is encouraged. Credits earned in Advanced or Complimentary Coursework "Beyond the Pathway" may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
• 460298 - Special Topics (Construction Carpentry)
• Career Options
• JAG Courses

Course Description		
Students will layout and plan the construction of base and wall cabinets. They will prepare wood surfaces for finishing as well as install cabinets and special units.		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site f) Identify and understand safe rigging practices	
3	**Cabinet Construction and Installation:** a) Study design layout of the different types of kitchen layouts b) Identify standardized cabinet and appliance dimensions c) Produce a kitchen cabinet layout d) Identify components of the factory built cabinets e) Lay out custom built cabinets f) Construct cabinet frames	

	g) Construct cabinet boxes h) Construct and install drawers i) Construct and install cabinet doors j) Sand, prepare and finish wood surfaces k) Install shelf supporting devices l) Install cabinets m) Install plastic laminates n) Install counter tops o) Install cabinet hardware p) Construct and install special units such as bookcases, medicine cabinets and window seats	

Connections:
*Common Core State Standards
*KOSSA TRACK
*Common Core Technical Standards
*New Generation Science Standards
*Post-Secondary: KCTCS CAR 240/241
*CTSO--SkillsUSA

Course Description		
This course covers roof types and combinations of roof types used in the construction industry. The emphasis of this course is on layout, cutting and installing ceiling joists, rafters, roof sheathing, and roof coverings for both commercial and residential construction.		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety:** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site f) Identify and understand safe rigging practices	
3	**Metal Framing:** a) Understand the background, advantages, and applications of metal framing (e.g., cost savings, workability, varied sizes and shapes, ease of operation, fire resistance, and sound transmission)	

	b) Identify metal framing components and their sizes; gauges of metal; types and shapes of beams, columns, and pilasters; and various trims and fasteners used for interior partition work c) Read prints and specifications to determine the type of partition and its location, layout, and related requirements d) Identify, estimate and describe installation of ceiling and wall covering (e.g., suspended ceiling, drywall, paneling)	
4	**Hand and Power Tools:** a) Identify and demonstrate the safe and proper use of hand tools (e.g., fastening devices, leveling devices, edge cutting devices) b) Identify and demonstrate the safe and proper use of power tools (e.g., electric portable and stationary, powder-actuated, pneumatic)	
5	**Wood Framing**: a) Plan a roof system b) Calculate, layout, cut and erect rafters to build a gable roof c) Calculate, layout, cut and erect rafters to build a hip roof and/or other type of roofs d) Cut and install jack rafters e) Cut and install ceiling joists f) Install purlins, collar ties, and knee walls g) Frame roof openings and roof saddles h) Frame dormers i) Install roof sheathing j) Install roof underlayment k) Install roof flashing and drip edge l) Install various types of roof coverings m) Install various types of attic vents n) Install prefabricated trusses o) Cut, construct, and install trusses	

Connections:
*Common Core State Standards
*KOSSA TRACK
*Common Core Technical Standards
*New Generation Science Standards
*Post-Secondary: KCTCS CAR 196/197
*CTSO--SkillsUSA

Construction Forms

460218

Course Description		
This course will introduce the student to heavy and commercial construction. The student will receive information about rigging, wall forms, vertical piers and columns, grade curb forms, horizontal beam forms, above-grade slab systems, fireproof encasement forms, stair forms, bridge and bridge deck forms.		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety:** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site f) Identify and understand safe rigging practices	
3	**Construction Forms:** a) Discuss basic properties of concrete b) Identify different soil conditions and the effects on footing design c) Name important structural components that can be	

	fabricated from formwork and concrete d) Describe and/or build various types of foundation systems e) Identify form systems and components used to construct wall forms f) Identify form systems and components used to construct vertical piers and columns g) Describe the construction of horizontal beam forms h) Explain the construction of above grade forms (piles, piers, columns, caps, and forming) i) Describe the construction of fire-proofing encasement forms j) Layout and estimate materials for concrete stair forms k) Calculate the quantity of concrete blocks and common face brick needed for a concrete block wall l) Calculate the amount of concrete needed for footings and foundation walls	

Connections:
*Common Core State Standards
*KOSSA TRACK
*Common Core Technical Standards
*New Generation Science Standards
*Post-Secondary: KCTCS CAR 150/151
*CTSO--SkillsUSA

Construction Prints

460217

Course Description		
This course will provide a series of lectures, demonstrations, and practice exercises in the study of symbols, views, sections, details, and material lists found on architectural working drawings, building materials and specifications lists, and construction dimensioning systems and charts/schedules.		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site	
3	**Construction Prints:** a) Demonstrate view projection techniques as applicable to the construction trades b) Identify different architectural line types c) Identify standard listings on construction working drawings and details	

	d) Interpret a list of architectural terms associated with planning including various symbols and uses e) List procedural construction requirements from notations on working drawings, details and specifications f) Specify duty-specific uses of contour and grade notes g) Determine overall measurement (lengths, heights, and depths) h) Describe various materials' usage in sectioned drawings i) Describe assembly techniques used in various sectioned drawings j) Complete various sectioned views k) Identify various prefabricated materials from vendor catalogs l) Display an understanding of estimating procedures m) Construct a materials control chart for a construction project n) Display an understanding of door and window schedules o) Determine structural calculations p) Identify plumbing, air conditioning, electrical, concrete construction, and building procedures and techniques from various related details and drawings q) Compile a duty-specific hardware list for a construction project r) List duty-specific fire prevention techniques s) Identify and list duty-specific problems in a multi-story dwelling t) Identify all construction documents required in the completed building process	
4	**Metal Framing:** a) Read prints and specifications to determine the type of partition and its location, layout, and related requirements	
5	**Building Layout:** a) Identify and read relevant sections of the building plan	

Connections:
*Common Core State Standards
*KOSSA TRACK
*Common Core Technical Standards
*New Generation Science Standards
*Post-Secondary: KCTCS BRX 220
*CTSO--SkillsUSA

Co-op (Carpentry)

460242

Course Description		
Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Co-op Education program receive compensation for their work.		
Content/Process		
1	**Co-op (Carpentry):** a) Gain career awareness and the opportunity to test career choice(s) b) Receive work experience related to career interests prior to graduation c) Integrate classroom/lab studies with work experience d) Receive exposure to facilities and equipment unavailable in a classroom setting e) Increase employability potential after graduation	
Connections: *Common Core State Standards *KOSSA TRACK *Common Core Technical Standards *New Generation Science Standards *Post-Secondary: KCTCS CAR 299 *CTSO--SkillsUSA		

Exterior and Interior Finish

460219

Course Description		
This course presents basic concepts of building trim, gypsum wallboard, paneling, base, ceiling and wall molding with instruction on acoustical ceilings and insulation, wood floors, tile, inlaid adhesive and tools of the flooring trade. This course will continue to refine the techniques and skills taught in the previous carpentry courses. In this course, cost control, speed, and precision are emphasized. In addition, students will demonstrate the skills associated with the exterior finishing of a house.		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site	
3	**Exterior and Interior Finish:** a) Install windows, hardware and trim b) Estimate and install insulation	

	c) Install various types of exterior siding d) Estimate, install, and finish interior drywall e) Estimate and install paneling and molding f) Install doors, hardware, and trim g) Erect scaffolds h) Estimate, cut and install floor, wall and ceiling molding i) Build and install cornices using different types of materials j) Install soffit vents k) Install gable vents l) Install various types of floor covering m) Layout and construct cabinets (optional task) n) Layout and install cabinets (optional task)	

Connections:
*Common Core State Standards
*KOSSA TRACK
*Common Core Technical Standards
*New Generation Science Standards
*Post-Secondary: KCTCS CAR 200/201
*CTSO--SkillsUSA

Floor and Wall Framing

460212

Course Description		
The student will practice floor framing, layout, and construction of floor frames. Cutting and installing floor and wall framing members according to plans and specifications will also be practiced.		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site	
3	**Metal Framing:** a) Understand the background, advantages, and applications of metal framing (e.g., cost savings, workability, varied sizes and shapes, ease of operation, fire resistance, and sound transmission) b) Identify metal framing components and their sizes; gauges of metal; types and shapes of beams, columns, and pilasters;	

	and various trims and fasteners used for interior partition work c) Read prints and specifications to determine the type of partition and its location, layout, and related requirements d) Identify, estimate and describe installation of ceiling and wall covering (e.g., suspended ceiling, drywall, paneling)	
4	**Wood Framing:** a) Building Layout b) Install sill plates to foundation walls c) Install support beams d) Frame built-up girders e) Install Lally posts f) Install floor joists g) Frame floor openings h) Lay subfloors and underlayment i) Calculate layout, cut, and install stairs j) Construct, layout, and install exterior walls k) Frame wall openings l) Install exterior wall sheathing m) Layout, construct, install, and frame partition walls using wood and steel studs n) Frame special partitions (i.e. late blueprint changes) o) Install house wrap	
Connections: *Common Core State Standards *KOSSA TRACK *Common Core Technical Standards *New Generation Science Standards *Post-Secondary: KCTCS CAR 190/191 *CTSO--SkillsUSA		

Industrial Safety

499930

Course Description		
This course provides practical training in industrial safety. The students are taught to observe general safety rules and regulations, to apply work site and shop safety rules, and to apply OSHA regulations. Students are encouraged to obtain certification in first aid and cardiopulmonary resuscitation.		
Content/Process		
1	**Industrial Safety:** a. Apply work site and lab safety procedures b. Apply personal safety rules and procedures c. Apply fire prevention rules and procedures d. Describe and demonstrate universal precautions procedures e. Demonstrate hazardous communications procedures f. Obtain first aid certification g. Obtain CPR certification (recommended but not required) h. Obtain OSHA 10 certification (recommended but not required)	
Connections: *Common Core State Standards *KOSSA TRACK *Common Core Technical Standards *New Generation Science Standards *Post-Secondary: KCTCS ISX 100 *CTSO--SkillsUSA		

Course Description		
This course is the introduction to the construction carpentry industry. The class will emphasize safe and proper methods of operating hand tools, portable power tools, and stationary power tools in the construction industry.		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site	
3	**Hand and Power Tools:** a) Identify and use various types of fasteners, anchors, and adhesives used in the construction industry b) Demonstrate the safe and proper use of the following types of hand tools: fastening devices, layout and measuring devices, leveling devices, edge cutting devices, etc.	

	c) Demonstrate the safe and proper use of the following types of portable power tools: various saws, surfacing and shaping tools, drills, pneumatic tools, etc. d) Demonstrate the safe and proper use of the following stationary power tools: various saws, drill press, surfacing and shaping tools, drills, pneumatic tools, etc. e) Build a project using tools of the trade: sawhorse, shop bench, tool box, picnic table	
4	**Building Layout** a. Identify and use various types of building materials	

Connections:
*Common Core State Standards
*KOSSA TRACK
*Common Core Technical Standards
*New Generation Science Standards
*Post-Secondary: KCTCS CAR 126/127
*CTSO--SkillsUSA

Internship (Carpentry)

460245

Course Description		
Includes various Construction Carpentry Technology topics, issues and trends. Topics may vary semester to semester at the discretion of the instructor; course may be repeated with different topics to a maximum of six credit hours		
Content/Process		
1	**Internship Carpentry:** a) Gain career awareness and the opportunity to test career choice(s) b) Receive work experience related to career interests prior to graduation c) Integrate classroom/lab studies with work experience d) Receive exposure to facilities and equipment unavailable in a classroom setting e) Increase employability potential after graduation f) Demonstrate a working knowledge of the topic chosen for the class	
Connections: *Common Core State Standards *KOSSA TRACK *Common Core Technical Standards *New Generation Science Standards *Post-Secondary: KCTCS CAR 198 *CTSO--SkillsUSA		

Site Layout and Foundations

460214

Course Description		
Students will prepare materials, calculate the cost for a building site, and layout a site with a transit, locating property lines and corners. Students calculate the amount of concrete needed for footing and foundation walls and construct different types of foundations and forms		
Content/Process		
1	**Math for the Trades:** a) Add, subtract, multiply, and divide single-, double-, and triple-digit numbers b) Use fractions to add, subtract, multiply, and divide parts of numbers c) Convert fractions to decimals and decimals to fractions, and use decimals to find percentages d) Use and understand how to read measuring tools e) Construct layouts using lines, circles, and angles f) Explain square roots, square numbers, and the Pythagorean Theorem g) Use area measure to find the area of: rectangles, squares, and circles h) Use volume measure to calculate the volume of three-dimensional objects i) Perform mathematics functions as related to tasks being performed j) Identify the actual and nominal sizes of lumber	
2	**Health and Safety** a) Assume responsibility for safety of self and others b) Identify the proper use of personal protection equipment and general job safety (e.g., eye protection, harnesses, footwear) c) Identify universal safety precaution procedures (e.g., barriers, overhead, guardrails, proper lifting) d) Manage personal health and wellness (e.g., substance abuse, air pollutants, chemicals, workplace toxins) e) Explain the use of hand signals used as communication on a construction site	
3	**Building Layout:** a) Explain safety procedures associated with site layout and foundations b) Describe building site leveling/layout instruments (ex.	

	transit, total station) c) Identify and read relevant sections of the building plan d) Identify tools and materials required in the building layout process e) Identify the leveling and layout equipment (e.g., builders level, transit, tape lines) f) Demonstrate an ability to keep and interpret notes in a field book (e.g., elevation, distance, triangulation)	
4	**Formwork:** a) Discuss basic properties of concrete b) Identify different soil conditions and the effects on footing design c) Name important structural components that can be fabricated from formwork and concrete d) Describe and/or build various types of foundation systems e) Calculate the quantity of concrete blocks and common face brick needed for a concrete block wall f) Calculate the amount of concrete needed for footings and foundation walls	
5	**Piers, Columns, Pile caps:** a) Explain & build the construction of piles, piers, & columns b) Differentiate between proper and improper components and design of piers, columns, pile caps, and pier caps c) Solve equations commonly used in designing and estimating piers, columns, and caps	
Connections: *Common Core State Standards *KOSSA TRACK *Common Core Technical Standards *New Generation Science Standards *Post-Secondary: KCTCS CAR 140/141 *CTSO—Skills USA		